

## WHAT IS CLAIMED IS:

1. A liquid fuel cell which comprises, as an assembly:
  - (a) a negative electrode which serves as a hydrogen electrode;
  - (b) a positive electrode which serves as an oxygen electrode counterposed to the negative electrode keeping a space therebetween;
  - (c) a permeable membrane to partition the space between the negative and positive electrodes;
  - (d) an electrolyte solution in contact with the negative electrode; and
  - (e) an oxygen source in contact with the positive electrode;
 in which the negative electrode as the hydrogen electrode is made of an unfluorinated or fluorinated hydrogen absorbing alloy before or after hydrogenation and the electrolyte solution which serves also as a fuel source is an aqueous solution containing an alkaline compound and a substance capable of generating negative hydrogen ions.
  
2. The liquid fuel cell as claimed in claim 1 in which the hydrogen absorbing alloy forming the negative electrode is selected from the group consisting of  $\text{LaNi}_{4.7}\text{Al}_{0.3}$ ,  $\text{MmNi}_{0.35}\text{Mn}_{0.4}\text{Al}_{0.3}\text{Co}_{0.75}$ ,  $\text{MmNi}_{3.75}\text{Co}_{0.75}\text{Mn}_{0.20}\text{Al}_{0.30}$ ,  $\text{Ti}_{0.5}\text{Zr}_{0.5}\text{Mn}_{0.8}\text{Cr}_{0.8}\text{Ni}_{0.4}$ ,  $\text{Ti}_{0.5}\text{Zr}_{0.5}\text{Mn}_{0.5}\text{Cr}_{0.5}\text{Ni}$ ,  $\text{Ti}_{0.5}\text{Zr}_{0.5}\text{V}_{0.75}\text{Ni}_{1.25}$ ,  $\text{Ti}_{0.5}\text{Zr}_{0.5}\text{V}_{0.5}\text{Ni}_{1.5}$ ,  $\text{Ti}_{0.1}\text{Zr}_{0.9}\text{V}_{0.2}\text{Mn}_{0.6}\text{Co}_{0.1}\text{Ni}_{1.1}$  and  $\text{MmNi}_{3.87}\text{Co}_{0.78}\text{Mn}_{0.10}\text{Al}_{0.38}$ , in which Mm denotes a misch metal.
  
3. The liquid fuel cell as claimed in claim 1 in which the substance capable of generating negative hydrogen ions contained in the electrolyte solution is a metal-hydrogen complex compound represented by the general formula  $\text{M}_\text{I}^+[\text{M}_\text{II}^{3+}(\text{H}^-)_4]$ , in which  $\text{M}_\text{I}$  is an alkali metal element and  $\text{M}_\text{II}$  is an element of boron, aluminum or gallium.
  
4. The liquid fuel cell as claimed in claim 3 in which the substance capable of generating negative hydrogen ions

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is potassium borohydride, sodium borohydride or lithium aluminohydride.

5. The liquid fuel cell as claimed in claim 1 in which the alkaline compound contained in the electrolyte solution is an alkali metal hydroxide.

6. The liquid fuel cell as claimed in claim 5 in which the concentration of the alkali metal hydroxide in the electrolyte solution is in the range from 5 to 30% by weight.

7. The liquid fuel cell as claimed in claim 3 in which the concentration of the metal-hydrogen complex compound in the electrolyte solution is in the range from 0.1 to 50% by weight.

8. The liquid fuel cell as claimed in claim 1 in which the oxygen source is oxygen gas or air.

9. The liquid fuel cell as claimed in claim 1 in which the oxygen source is an aqueous solution of a water-soluble oxidizing compound.

10. The liquid fuel cell as claimed in claim 1 in which the permeable membrane partitioning the space between the negative and positive electrodes is a cation exchange membrane, anion exchange, exchange membrane or amphoteric ion exchange membrane.

11. The liquid fuel cell as claimed in claim 1 in which the negative electrode has a layered structure comprising a substrate plate as a core and a cladding layer thereon made from the hydrogen absorbing alloy.

12. The liquid fuel cell as claimed in claim 11 in which the cladding layer of the hydrogen absorbing alloy on the substrate plate has a thickness in the range from 50 to 300  $\mu\text{m}$ .

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13. The liquid fuel cell as claimed in claim 11 in which the hydrogen absorbing alloy forming the cladding layer is fluorinated at least in the surface layer.

14. The liquid fuel cell as claimed in claim 13 in which the fluorinated surface layer of the cladding layer of the hydrogen absorbing alloy has a thickness in the range from 0.01 to 1  $\mu\text{m}$ .

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